

NON-PUBLIC?: N  
ACCESSION #: 9302010083  
LICENSEE EVENT REPORT (LER)

FACILITY NAME: South Texas, Unit 2 PAGE: 1 OF 04

DOCKET NUMBER: 05000499

TITLE: Manual Reactor Trip due to the Closure of "D" Train  
Feedwater Regulating Valve  
EVENT DATE: 12/27/92 LER #: 92-010-00 REPORT DATE: 01/26/93

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR  
SECTION:  
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:  
NAME: Charles Ayala - Supervising TELEPHONE: (512) 972-8628  
Licensing Engineer

COMPONENT FAILURE DESCRIPTION:  
CAUSE: X SYSTEM: JG COMPONENT: CBD MANUFACTURER: W120  
REPORTABLE NPRDS: YES

SUPPLEMENTAL REPORT EXPECTED: NO

#### ABSTRACT:

On December 27, 1992, Unit 2 was in Mode 1 at 100% power. A manual reactor trip was initiated at 0850 hours, due to the closure of the "D" Steam Generator feedwater regulating valve which resulted in an uncontrollable reduction in "D" Steam Generator level. The cause of the reactor trip was the failure of a driver card (NCD) in the Westinghouse 7300 process control system for the affected feedwater regulating valve. This card failure resulted in a loss of signal to the "D" feedwater regulating valve causing the valve to move to its default (closed) position. Analysis of the specific component failure within the circuit card indicates that the power supply for the board coupled with the clock counter failed resulting in the loss of card output. Corrective actions include performing an evaluation of the power supply failure mode and reliability using industry data, Westinghouse data and the as found failure mode. Based on the evaluation additional corrective actions will

be developed as necessary.

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END OF ABSTRACT

TEXT PAGE 2 OF 4

#### DESCRIPTION OF EVENT:

On December 27, 1992, Unit 2 was in Mode 1 at 100% reactor power. A manual reactor trip was initiated at 0850 hours due to the closure of the "D" Train Steam Generator feedwater regulating valve which resulted in an uncontrollable reduction in "D" Steam Generator level. Prior to the manual trip initiation attempts were made to control "D" feedwater regulating valve in both automatic and manual control with no success. Upon realizing that feedwater flow could not be recovered prior to exceeding the "D" Steam Generator low level automatic trip, Unit 2 Reactor Operators initiated a manual reactor trip. The "D" Steam Generator level was approximately 40% narrow range (automatic trip setpoint 33% narrow range) when this action was taken. Actuation of the Auxiliary Feedwater System occurred as expected as did feedwater isolation on low Reactor Coolant System average coolant temperature.

Following control rod insertion a letdown isolation of the Chemical Volume Control System occurred due to cooldown of the Reactor Coolant System. The lowest observed pressurizer level was 16%. The cooldown of the Reactor Coolant System was caused, in part, due to supplying auxiliary steam to Unit 1 in support of that unit's startup from a refueling outage. Rapid operator actions isolated the auxiliary steam load and Main Steam Isolation Valves were closed to prevent any additional cooldown.

Unit 2 was stabilized in Mode 3 without incident. During the recovery to normal Hot-Standby configuration an attempt was made to reestablish normal feedwater flow to the Steam Generators. The Startup Feedwater Pump would not start due to a low lube oil pressure condition. Initial investigation revealed that the lube oil system coalescing filters were clogged resulting in a high differential pressure. The duplex filtration system was swapped to new filters and normal feedwater was reestablished without further problems.

This event was reported to the Nuclear Regulatory Commission on December 27, 1992 at 1100 hours.

LER\93013003.U2

TEXT PAGE 3 OF 4

#### CAUSE OF EVENT:

The cause of the reactor trip was the failure of a driver card (NCD) in the Westinghouse 7300 process control system for the affected feedwater regulating valve. This card failure resulted in a loss of signal to the "D" feedwater regulating valve causing the valve to move to its default (closed) position. Analysis of the specific component failure within the circuit card indicates that the power supply for the board coupled with a primary clock counter failed resulting in the loss of card output.

The cause of the failure of the startup feedwater pump to start is a combination of a switch being out of calibration for the start permissive pressure switch and a clogged filter. The failure to detect this condition was due to an improper setpoint. The as found value of the start permissive pressure switch was found high out of tolerance. Review of the design documents associated with this permissive indicated that a condition could exist where the pump start permissive would not be satisfied yet, no alarm, due to a low lube oil pressure condition, would be present. The absence of an alarm in the control room for the startup feedwater pump coalescing filter differential pressure resulted in a failure to detect the inability of the Startup Steam Generator Feedwater pump to start.

#### ANALYSIS OF EVENT:

The event is reportable pursuant to 10 CFR 50.73 (a)(2)(iv). There were no adverse radiological or safety consequences as a result of this event. All Engineered Safety Systems functioned as designed.

#### CORRECTIVE ACTIONS

1. The pressure switches associated with the Startup Feedwater Pump start permissive and low lube oil pressure alarm were calibrated following this event.

LER\93013003.U2

TEXT PAGE 4 OF 4

#### CORRECTIVE ACTIONS (Con't)

2. The design setpoint for the Startup Feedwater pump start permissive pressure switch has been evaluated in light of the low pressure alarm setpoint. As a result, the switch scheme on the Startup Steam Generator Feedwater Pump will be revised so that the low lube oil

pressure alarm is received prior to the pump start permissive being defeated. This action will be completed in Unit 1 by June 29, 1993 and in Unit 2 by the end of the third refueling outage.

3. The power supply failure mode and reliability will be evaluated using industry data, Westinghouse data and the as found failure mode. This evaluation will be completed by April 1, 1993. Additional corrective actions will be developed as necessary.

#### ADDITIONAL INFORMATION:

The NCD Control driver card Model number is 2837A16G03 and is manufactured by Westinghouse.

A search of the NPRDS determined that there have been several NCD driver card failure incidents which have resulted in reactor trips.

There have been no previous similar problems at STPEGS, involving a failed NCD driver card which resulted in a reactor trip.

LER\93013003.U2

ATTACHMENT 1 TO 9302010083 PAGE 1 OF 2

The Light  
Company  
Houston Lighting & Power  
South Texas Project Electric Generating Station  
P. O. Box 289 Wadsworth, Texas 77483

January 26, 1993  
ST-HL-AE-4311  
File No.: G26  
10CFR50.73

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

South Texas Project  
Unit 2  
Docket No. STN 50-499  
Licensee Event Report 92-010  
Manual Reactor Trip due to the  
Closure of "D" Train Feedwater Regulating Valve

Pursuant to 10CFR50.73, Houston Lighting & Power (HL&P) submits the attached Licensee Event Report 92-010 regarding a manual reactor trip due to the closure of "D" train Feedwater Regulating Valve. This event did not have an adverse effect on the health and safety of the public.

If you should have any questions on this matter, please contact Mr. C. A. Ayala at (512) 972-8628 or me at (512) 972-7921.

W. H. Kinsey, Jr.  
Vice President,  
Nuclear Generation

JMP/sr

Attachment: LER 92-010 (South Texas, Unit 2)

LER\93013003.U2

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ATTACHMENT 1 TO 9302010083 PAGE 2 OF 2

Houston Lighting & Power Company ST-HL-AE-4311  
South Texas Project Electric Generating Station File No.: G26  
Page 2  
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Revised 01/25/93

L4/NRC/

\*\*\* END OF DOCUMENT \*\*\*

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